IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

NIPPON SHINYAKU CO., LTD., Plaintiff, v. SAREPTA THERAPEUTICS, INC., Defendant.	C.A. No. 21-1015 (GBW) REDACTED - PUBLIC VERSION Original filing date: September 5, 2023 Redacted filing date: September 12, 2023
SAREPTA THERAPEUTICS, INC. and THE UNIVERSITY OF WESTERN AUSTRALIA, Defendant/Counter-Plaintiffs, v. NIPPON SHINYAKU CO., LTD. and NS PHARMA, INC. Plaintiff/Counter-Defendants.	

COUNTER-PLAINTIFF SAREPTA'S ANSWER TO COUNTER-DEFENDANTS' COUNTERCLAIMS

Counter-Plaintiff Sarepta Therapeutics, Inc. ("Sarepta"), by and through its undersigned counsel, hereby answers the Counterclaims of Counter-Defendants Nippon Shinyaku Co., Ltd. ("Nippon Shinyaku") and NS Pharma, Inc. ("NS Pharma") (collectively, "NS") in NS's Answer to Counter-Plaintiffs' Amended Counterclaims (D.I. 344), filed September 1, 2023. Unless specifically admitted herein each and every allegation in the Counterclaims is denied.

ANSWER TO COUNTERCLAIMS

Nature of the Action[1]

1. The NS Counterclaimants assert a counterclaim for unenforceability of United States Patent Nos. 9,994,851 ("'851 Patent," D.I. 2-9), 10,227,590 ("'590 Patent," D.I. 2-10), and 10,266,827 ("'827 Patent," D.I. 2-11) (collectively, the "UWA Patents").

Answer: Paragraph 1 sets forth a characterization of the action to which no response is required. To the extent a response is required, Sarepta admits that the Counterclaims purport to assert unenforceability of UWA's U.S. Patent Nos. 9,994,851 ("the '851 Patent"); 10,227,590 ("the '590 Patent"); and 10,266,827 ("the '827 Patent") (collectively, "the UWA Patents"). Sarepta denies any remaining allegations in Paragraph 1.

2. The NS Counterclaimants also assert a counterclaim for *Walker Process* fraud based on Sarepta's violations of the Sherman Act, 15 U.S.C. §§ 1 *et seq.* by asserting patents against the NS Counterclaimants that were obtained by fraud on the United States Patent and Trademark Office ("USPTO") in an effort to unlawfully acquire or maintain monopoly power through improper means. Upon information and belief, Sarepta is the exclusive licensee with assertion rights for the UWA Patents.

Answer: Paragraph 2 sets forth a characterization of the action to which no response is required. To the extent a response is required, Sarepta admits that the Counterclaims purport to assert violations of the Sherman Act, 15 U.S.C. § 2, with respect to the assertion of the UWA Patents. Sarepta denies that the UWA Patents were obtained by fraud on the USPTO. Sarepta admits that it has exclusive rights to the UWA Patents for the treatment of muscular dystrophies and the right to enforce the UWA Patents. Sarepta denies any remaining allegations in Paragraph 2.

Parties

3. Nippon Shinyaku is a Japanese company with a principal place of business at 14, Nishinosho-Monguchi-cho, Kisshoin, Minami-ku, Kyoto 601-8550, Japan.

[1] For convenience and clarity, Sarepta's Answer uses the same headings as the Counterclaims. Sarepta does not admit any allegations contained in the Counterclaims' headings.

Answer: Upon information and belief, Sarepta admits the allegations in Paragraph 3.

4. NS Pharma is a Delaware corporation with its principal place of business at 149 East Ridgewood Ave., Suite 280S, Paramus, NJ 07652.

Answer: Upon information and belief, Sarepta admits that NS's Answer dated February 18, 2022 (D.I. 96) stated that "NS Pharma is a corporation organized and existing under the laws of the State of Delaware" and "NS Pharma has a principal place of business at 140 East Ridgewood Ave., Suite 280S, Paramus, NJ 07652."

5. Nippon Shinyaku is an innovative pharmaceutical company whose mission is to "help people lead healthier, happier lives." It accomplishes this mission by developing and supplying unique and high-quality therapies that are safe and highly effective relative to other drugs and that contribute to a better quality of life for patients.

Answer: Sarepta is without knowledge or information sufficient to form a belief as to the truth of the matters asserted in Paragraph 5 and therefore denies them.

6. Nippon Shinyaku not only serves general patient populations through its various drugs for urological diseases, hematology, gynecology, and otorhinolaryngology—but it also seeks to provide meaningful relief for patients suffering from rare, intractable diseases like DMD.

Answer: Sarepta is without knowledge or information sufficient to form a belief as to the truth of the matters asserted in Paragraph 6 and therefore denies them.

7. NS Pharma is a wholly-owned subsidiary of Nippon Shinyaku, and markets VILTEPSO® in the United States.

Answer: Upon information and belief, Sarepta admits the allegations in Paragraph 7.

8. Upon information and belief, Sarepta is a Delaware corporation with its principal place of business at 215 First Street, Cambridge, Massachusetts 02142.

Answer: Sarepta admits the allegations in Paragraph 8.

Jurisdiction and Venue

9. The NS Counterclaimants' claims for declaratory judgment of unenforceability of the UWA Patents arise under the Patent Laws of the United States, 35 U.S.C. §§ 1 *et seq.* and under the Declaratory Judgment Act, 28 U.S.C. §§ 2201 *et seq.*

Answer: Paragraph 9 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta admits that the Counterclaims purport to assert a claim for declaratory judgment of unenforceability of the UWA Patents under the Patent Laws of the United States, 35 U.S.C. §§ 1 *et seq.*, and under the Declaratory Judgment Act, 28 U.S.C. §§ 2201 *et seq.* Sarepta denies any remaining allegations in Paragraph 9.

10. The NS Counterclaimants' *Walker Process* fraud claims arise under the Sherman Act, 15 U.S.C. §§ 1, *et seq.*

Answer: Paragraph 10 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta admits that the Counterclaims purport to assert a claim for *Walker Process* fraud under the Sherman Act, 15 U.S.C. § 2. Sarepta denies any remaining allegations in Paragraph 10.

11. This Court has subject-matter jurisdiction over these claims under 28 U.S.C. §§ 1331 and 1338(a).

Answer: Paragraph 11 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta does not contest that the Court has subject matter jurisdiction over the Counterclaims for purposes of this action only. Sarepta denies any remaining allegations in Paragraph 11.

12. The amount in controversy exceeds $75,000, exclusive of interest and costs.

Answer: Paragraph 12 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta admits that the Counterclaims allege that the amount in controversy exceeds $75,000, exclusive of interest and costs. Sarepta denies any remaining allegations in Paragraph 12.

13. This Court has personal jurisdiction over Sarepta, a Delaware corporation, at least because Sarepta resides in this District and has consented to this Court's jurisdiction. D.I. 2-1, Section 10.

Answer: Sarepta admits that it is a Delaware corporation. Sarepta does not contest that this Court has personal jurisdiction over it for purposes of this action only. Sarepta denies any remaining allegations in Paragraph 13.

14. Venue is proper under 28 U.S.C. §§ 1391(b), 1391(c), and 1400(b) at least because Sarepta, a Delaware corporation, resides in this District and because Sarepta has consented to this venue. D.I. 2-1, Section 10.

Answer: Sarepta admits that it is a Delaware corporation. Sarepta does not contest that venue is proper in the District of Delaware for purposes of this action only. Sarepta denies any remaining allegations in Paragraph 14.

Duchenne Muscular Dystrophy

15. DMD is a severe X chromosome-linked genetic disorder that predominantly affects young boys. Approximately one in every 3,500 boys suffer from DMD, which is the most common form of hereditary progressive muscular dystrophy. Children with DMD suffer muscle weakness as early as age four and progressively lose muscle function and quality-of-life. By age twelve, DMD patients typically lose ambulatory function and are confined to wheelchairs. Body-wide muscle loss also contributes to numerous other health complications throughout patients' lives. As a result of DMD-induced cardiac and/or respiratory deficiencies, most patients suffering from DMD do not live past their twenties.

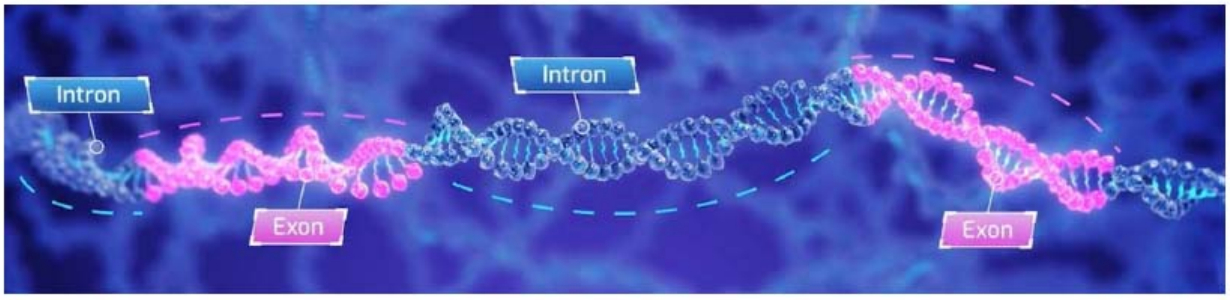
Answer: Sarepta admits that DMD is a rare genetic disorder characterized by progressive muscle deterioration and weakness, which primarily affects boys but in rare cases can affect girls. Sarepta admits that DMD often occurs in people without a known family history of the condition. Sarepta admits that various publications state that DMD occurs in about one out of every 3,600 to 5,000 male infants worldwide and is the most common type of muscular dystrophy. Sarepta admits that the first symptoms usually present between three- and five-years old and worsen over time. Sarepta admits that patients with DMD progressively lose the ability to perform everyday activities and often require a wheelchair and assistance by their early teens. Sarepta admits that as DMD progresses, life-threatening heart and respiratory conditions can occur, and patients, although

disease severity and life expectancy vary, typically die of the disease in their 20s or 30s. Sarepta denies any remaining allegations in Paragraph 15.

16. DMD is caused by mutation(s) in the dystrophin gene, which codes for the dystrophin protein. The dystrophin protein contributes to cell membrane stability in muscle cells and makes muscle cells less fragile. In DMD patients, however, the mutated dystrophin gene causes significant under-expression of the dystrophin protein, leaving them with insufficient levels of dystrophin protein to maintain their muscle cells.

Answer: Sarepta admits that the dystrophin gene encodes dystrophin protein. The dystrophin protein contributes to, *inter alia*, cell membrane stability in muscle cells and makes muscle cells less fragile. DMD is caused by mutation(s) in the dystrophin gene, resulting in significant under-expression or no expression of the functional dystrophin protein. Sarepta denies any remaining allegations in Paragraph 16.

17. The dystrophin gene is long, spanning approximately 2.2 million nucleotide pairs and comprising 79 exons (regions of nucleotides that code for the 3,685 amino acids making up the dystrophin protein) interspersed with introns (regions that do not code for the dystrophin protein).



Answer: Sarepta admits that the normal human dystrophin gene spans over 2 million nucleotides in length and comprises 79 exons (regions of the gene that encode the 3,685 amino acids that make up the normal dystrophin protein) interspersed with intron (regions that do not encode the protein). Sarepta denies any remaining allegations in Paragraph 17.

18. In a non-DMD patient, cells generally prepare dystrophin protein from the gene as follows:

> **Transcription:** The dystrophin gene (DNA) is transcribed into an RNA strand containing both exons and introns known as "pre-mRNA."

Splicing: Cellular machinery removes intron sequences and "splices" the exons together to form mRNA.
Translation: Cellular machinery "reads" the mRNA strand three nucleotides at a time to determine and assemble the amino acid sequence for dystrophin.

Answer: Sarepta admits that in the body, cells generally prepare dystrophin protein from the gene as follows:

Transcription: The dystrophin gene (DNA) is transcribed into an RNA strand containing both exons and introns known as "pre-mRNA."

Splicing: Cellular machinery removes intron sequences and stiches the exons together to form mRNA.

Translation: Cellular machinery "reads" the mRNA strand three nucleotides at a time to determine and assemble the amino acid sequence for dystrophin protein.

Sarepta denies any remaining allegations in Paragraph 18.

19. DMD typically results when a mutation shifts the amino acid reading frame, producing a non-functional dystrophin protein. As show below, even a single nucleotide deletion can alter how the cellular machinery reads the remainder of the mRNA sequence (and consequently how the cell assembles the dystrophin protein).

Original: ABC ABC ABC ABC ABC ABC

Mutation: ABA BCA BCA BCA BCA BCA

Answer: Sarepta admits that DMD typically occurs when a mutation in the dystrophin gene shifts the amino acid reading frame in a manner that the functional dystrophin protein cannot be produced due to, *inter alia*, premature termination of translation ("out-of-frame"). Sarepta denies any remaining allegations in Paragraph 19.

20. Mutations that preserve the original amino acid reading frame may produce a partially functional dystrophin protein with exon deletions. This typically causes a less-severe condition known as Becker Muscular Dystrophy ("BMD"). Like DMD, BMD patients suffer from muscle weakness and atrophy, but they experience milder and slower disease progression. Many BMD patients do not experience symptoms of disease onset until they are well into adulthood.

Answer: Sarepta admits that in Becker Muscular Dystrophy (BMD), in-frame mutations in the dystrophin gene result in truncated but functional dystrophin. Sarepta admits that BMD patients typically experience milder symptoms than DMD patients. Sarepta denies any remaining allegations in Paragraph 20.

21. There is no cure for DMD. Care providers have traditionally prescribed corticosteroids to promote muscle strength and delay disease progression. Such treatment carries substantial risks of side-effects, including weight gain and weakened bones, and does not stop the progress of the disease.

Answer: Sarepta admits that there is no cure for DMD. There was no disease-corrective treatment for DMD as of June 2005 either. Corticosteroids were known to carry substantial risks of side-effects, including weight gain and weakened bones, and did not stop the progress of the disease. Sarepta denies any remaining allegations in Paragraph 21.

Exon-Skipping Antisense Oligomers as a Therapeutic Option

22. Antisense oligomers ("ASOs") are short nucleic acid strands that modify splice patterns to address the genetic defects responsible for DMD. ASOs bind with particular nucleotide sequences in or near the exon of interest on the pre-mRNA strand. ASOs interfere with the ordinary splicing process, causing the cell to "skip" the mutated exon(s) when preparing mRNA.

Answer: Sarepta admits that antisense oligomers ("ASOs") can be short nucleic acid single-strands designed to modify splicing patterns to address the genetic defects responsible for DMD. In this context, ASOs are intended to bind to particular nucleotide sequences in or near the exon of interest on the pre-mRNA strand. ASOs can interfere with the ordinary splicing process, causing the cell to "skip" the targeted exons when preparing mRNA. Sarepta denies any remaining allegations in Paragraph 22.

23. By "skipping" the mutated exons, ASOs cause cells to prepare shorter-than-normal mRNA while preserving the original amino acid reading frame. As a result, patients' cells produce partially functional—rather than non-functional—protein. Applied to DMD, these treatments effectively convert a DMD patient into a BMD patient, providing substantially better quality-of-life.

Answer: Sarepta admits that by "skipping" the targeted exons, ASOs can cause cells to prepare shorter-than-normal mRNA while preserving the amino acid reading frame. When delivered into cells, DMD patients' cells can produce internally truncated but largely functional protein. As such, when administered to DMD patients, ASOs may convert a DMD patient into a BMD-like patient. Sarepta denies any remaining allegations in Paragraph 23.

Nippon Shinyaku's Development of Exon 53 Skipping Oligomers

24. Recognizing the severe impact of DMD, Nippon Shinyaku began developing exon skipping therapies for DMD. Nippon Shinyaku focused first on therapies targeting exon 53, which would provide a treatment for approximately 8% of all DMD patients. Nippon Shinyaku ultimately determined that a 21 nucleobase (also call a 21mer) sequence targeted to the 36th to 56th nucleotides from the 5' end of exon 53 (H53_36-56) exhibited superior exon skipping.

Answer: Sarepta is without knowledge or information sufficient to form a belief as to the truth of the matters asserted in Paragraph 24 and therefore denies them.

25. On September 1, 2010, Nippon Shinyaku and National Center of Neurology and Psychiatry ("NCNP") filed Japanese Patent App. No. 2010-196032, which described their discoveries.

Answer: Upon information and belief, Sarepta admits that Nippon Shinyaku purports to have filed Japanese Patent Application No. 2010-196032 with the National Center of Neurology and Psychiatry ("NCNP") on September 1, 2010. Sarepta is without knowledge or information sufficient to form a belief as to the truth of the remaining matters asserted in Paragraph 25 and therefore denies them.

26. Nippon Shinyaku has since continued its development of the 21mer ASO—now known as VILTEPSO®—and secured approval in both Japan and the United States for the use of VILTEPSO® in treating DMD. While clinical trials are ongoing, initial results are promising. "[D]ystrophin levels increased, on average, from 0.6% of normal at baseline to 5.9% of normal at week 25." And VILTEPSO® patients did not experience kidney toxicity, a side effect the FDA reported for other ASOs. *Id.*

Answer: Upon information and belief, Sarepta admits that Nippon Shinyaku obtained approval in Japan and the United States for Viltepso (viltolarsen) product. Sarepta is without

knowledge or information sufficient to form a belief as to the truth of the remaining matters asserted in Paragraph 26 and therefore denies them.

The UWA Patents

27. On June 12, 2018, the '851 Patent entitled "Antisense Oligonucleotides for Inducing Exon Skipping and Methods of Use Thereof" issued to the University of Western Australia ("UWA") as assignees with named inventors Stephen Donald Wilton, Sue Fletcher, and Graham McClorey. On information and belief, Sarepta holds exclusive assertion rights of the '851 Patent.

Answer: Sarepta admits that, on June 12, 2018, the '851 Patent entitled "Antisense Oligonucleotides for Inducing Exon Skipping and Methods of Use Thereof" issued to UWA as assignee with Stephen Donald Wilton, Sue Fletcher, and Graham McClorey as inventors. Sarepta admits that it has exclusive rights to the '851 Patent for the treatment of muscular dystrophies and the right to enforce the '851 Patent. Sarepta denies any remaining allegations in Paragraph 27.

28. On March 12, 2019, the '590 Patent entitled "Antisense Oligonucleotides for Inducing Exon Skipping and Methods of Use Thereof" issued to UWA as assignees with named inventors Stephen Donald Wilton, Sue Fletcher, and Graham McClorey. On information and belief, Sarepta holds exclusive assertion rights of the '590 Patent.

Answer: Sarepta admits that, on March 12, 2019, the '590 Patent entitled "Antisense Oligonucleotides for Inducing Exon Skipping and Methods of Use Thereof" issued to UWA as assignee with Stephen Donald Wilton, Sue Fletcher, and Graham McClorey as inventors. Sarepta admits that it has exclusive rights to the '590 Patent for the treatment of muscular dystrophies and the right to enforce the '590 Patent. Sarepta denies any remaining allegations in Paragraph 28.

29. On April 23, 2019, the '827 Patent entitled "Antisense Oligonucleotides for Inducing Exon Skipping and Methods of Use Thereof" issued to the UWA as assignees with named inventors Stephen Donald Wilton, Sue Fletcher, and Graham McClorey. On information and belief, Sarepta holds exclusive assertion rights of the '827 Patent.

Answer: Sarepta admits that, on April 23, 2019, the '827 Patent entitled "Antisense Oligonucleotides for Inducing Exon Skipping and Methods of Use Thereof" issued to UWA as

assignee with Stephen Donald Wilton, Sue Fletcher, and Graham McClorey as inventors. Sarepta admits that it has exclusive rights to the '827 Patent for the treatment of muscular dystrophies and the right to enforce the '827 Patent. Sarepta denies any remaining allegations in Paragraph 29.

The NS Counterclaimants and Sarepta are Direct Competitors

30. The NS Counterclaimants and Sarepta are direct competitors that each provide antisense oligonucleotide-based therapies for the treatment of DMD. Sarepta and Nippon Shinyaku are the only companies with FDA clearance to market oligonucleotide therapies that are indicated for the treatment of DMD for patients who have a mutation of the DMD gene that is amenable to exon 53 skipping. Sarepta's product is marketed under the name VYONDYS 53, and Nippon Shinyaku's product is marketed under the name VILTEPSO®. Sarepta also markets a product, EXONDYS 51, which is sometimes prescribed to DMD patients who have a mutation of the DMD gene that is amenable to exon 53 skipping.

Answer: Sarepta admits that it and Nippon Shinyaku develop and commercialize therapies for the treatment of certain DMD patients. Upon information and belief, Sarepta admits that Sarepta and Nippon Shinyaku are the only companies with approval from the U.S. Food and Drug Administration ("FDA") to market oligonucleotide therapies for the treatment of DMD in patients amenable to exon 53 skipping in the United States. Sarepta admits that its Vyondys 53® (golodirsen) product was approved by the FDA. Upon information and belief, Sarepta admits that Nippon Shinyaku's Viltepso (viltolarsen) product was subsequently approved by the FDA. Upon information and belief, Sarepta admits that a very small percentage of DMD patients with deletions involving exon 52 of the dystrophin gene can be treated with either exon 51 or exon 53-skipping products. Sarepta admits that its Exondys 51® product is a therapy for the treatment of certain DMD patients. Sarepta denies any remaining allegations in Paragraph 30.

31. In 2013 and 2015, the UWA obtained two patents directed towards antisense oligonucleotide-based therapies for the treatment of DMD: the '636 Patent (D.I. 39-1) and the '007 Patent) (D.I. 39-2). Each of these patents' claims encompasses Sarepta's VYONDYS 53 but fails to encompass Nippon Shinyaku's VILTEPSO®.

Answer: Paragraph 31 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta admits that UWA was granted U.S. Patent Nos. 8,455,636 ("the '636 patent") and 9,024,007 ("the '007 patent"), entitled "Antisense Oligonucleotides for Inducing Exon Skipping and Methods of Use Thereof." Sarepta admits that the '636 and '007 patents were issued by the USPTO on June 4, 2013 and May 5, 2015, respectively. Sarepta admits that the claims of the '007 patent cover Sarepta's Vyondys 53® (golodirsen) product. Sarepta denies any remaining allegations in Paragraph 31.

32. On January 16, 2017, FDA granted Orphan Drug Designation to Nippon Shinyaku for its antisense oligonucleotide-based therapy that would eventually be approved and marketed under the name VILTEPSO®. D.I. 39-3. Subsequent to FDA granting this Orphan Drug Designation, applications for the three UWA Patents were filed with the USPTO. These UWA Patents, unlike the '636 Patent and '007 Patent, included new claims aimed at capturing VILTEPSO®. Sarepta has listed the UWA Patents on its FDA Orange Book listing for VYONDYS 53®. NDA applicants "shall file with the application the patent number and the expiration date of any patent which claims the drug for which the applicant submitted the application or which claims a method of using such drug with respect to which a claim of patent infringement could reasonably be asserted if a person not licensed by the owner engaged in the manufacture, use, or sale of the drug." 21 U.S.C. § 355(b)(1). In the Orange Book, Sarepta lists a patent expiry date for the UWA Patents of June 28, 2025 but is seeking a significant patent term extension that would extend their expiry date at least with respect to claims covering VYONDYS 53®.

Answer: Paragraph 32 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta admits that the UWA Patents are listed in the FDA's *Approved Drug Products with Therapeutic Equivalence Evaluations* ("Orange Book") for Vyondys 53®. Sarepta admits that the Orange Book lists a patent expiry date of June 28, 2025 for the UWA Patents. Sarepta admits that it has submitted applications for patent term extension for the UWA Patents. Sarepta denies any remaining allegations in Paragraph 32.

33. Sarepta and Nippon Shinyaku have engaged in non-confidential communications regarding the licensing of Sarepta's UWA patents.

Answer: Sarepta denies the allegations in Paragraph 33.

34. After some initial discussion, a meeting occurred on or about January 13, 2020, during which Sarepta's VYONDYS 53® product and Nippon Shinyaku's VILTEPSO® product were discussed. The meeting was attended by at least Mr. Matthew Gall of Sarepta and Mr. Masaya Toda of Nippon Shinyaku. As a result of that January 13, 2020, meeting, the Parties agreed to engage in negotiations concerning the Parties' patent portfolios, including Sarepta's UWA Patents. Sarepta requested that further discussions be held under a confidentiality agreement, and Nippon Shinyaku understood that these discussions would include discussions of licensing Sarepta's UWA Patents to avoid litigation.

Answer: Sarepta admits that Matthew Gall of Sarepta attended a meeting with Masaya Toda of Nippon Shinyaku on or about January 13, 2020 to discuss a potential business relationship between Sarepta and Nippon Shinyaku. Sarepta is without sufficient knowledge or information to form a belief as to what Nippon Shinyaku understood the parties to have discussed, and therefore denies the same. Sarepta denies any remaining allegations in Paragraph 34.

35. During the same timeframe and before January 28, 2020, Chris Verni, Saretpa's [*sic*] Chief IP counsel sought out Nippon Shinyaku's outside counsel while they were attending a conference for the Association of Corporate Patent Counsel. Mr. Verni raised concerns about the possibility of litigation between the Parties and encouraged discussions as a means to avoid litigation.

Answer: Sarepta admits that Chris Verni, Sarepta's former Chief IP counsel, spoke with Nippon Shinyaku's outside counsel on or about January 28, 2020 while attending a conference for the Association of Corporate Patent Counsel. Sarepta denies any remaining allegations in Paragraph 35.

36. After June 1, 2021 Sarepta and Nippon Shinyaku were no longer engaged in confidential discussions relating to their respective patent portfolios or products.

Answer: Sarepta denies the allegations in Paragraph 36.

37. On July 6, 2021, Mr. Joe Zenkus, Senior Vice President at Sarepta, emailed Mr. Masaya Toda at Nippon Shinyaku. D.I. 39-4. In his email, Mr. Zenkus notes that "Sarepta is prepared to…*pursue other actions deemed necessary for it to protect its rights*." Mr. Zenkus's statement was a threat that Sarepta would assert its UWA Patents against Nippon Shinyaku. This communication was not subject to any confidentiality obligation. Nippon Shinyaku's apprehension that Sarepta would file a lawsuit asserting the UWA Patents against Nippon Shinyaku's U.S. sales of its VILTEPSO® product, threatening Nippon Shinyaku's goal to serving DMD patients and

growing its U.S. market for this product, were realized when Sarepta asserted that the NS Counterclaimants infringe the UWA Patents. D.I. 89.

Answer: Paragraph 37 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta admits that on or about July 6, 2021, Joe Zenkus of Sarepta sent an email to Masaya Toda of Nippon Shinyaku regarding Sarepta's filing of the IPR petitions challenging the patentability of the NS Patents. Sarepta admits that Paragraph 37 quotes (with emphasis added) a portion of Nippon Shinyaku's Exhibit D.I. 39-4. Sarepta is without sufficient knowledge or information to form a belief as to Nippon Shinyaku's beliefs, and therefore denies the same. Sarepta denies any remaining allegations in Paragraph 37.

38. As set forth in Nippon Shinyaku's Second Amended Complaint (D.I. 86), the claims of the UWA Patents are invalid for failing to comply with the conditions and requirements of the patent laws of the United States, including, specifically and without limitation, 35 U.S.C. §§ 102, 103, and 112, and the rules, regulations, and laws pertaining thereto.

Answer: Sarepta denies the allegations in Paragraph 38.

39. Discovery produced by Sarepta now confirms that the UWA Patents are unenforceable because they were obtained by fraud on the USPTO.

Answer: Sarepta denies the allegations in Paragraph 39.

Answer to Claim X
(Alleged Unenforceability of the UWA Patents Based on Inequitable Conduct)

40. The NS Counterclaimants reallege and incorporate by reference the allegations set forth in the preceding paragraphs as if fully set forth herein.

Answer: Sarepta realleges as if fully set forth herein each of the foregoing responses.

Responses to Allegations Regarding Prosecution of the UWA Patents

41. Upon information and belief, [redacted]. Upon information and belief, Sarepta was responsible for the application and prosecution of the UWA Patents.

Answer: Sarepta admits that [redacted]. Sarepta otherwise denies the allegations in Paragraph 41.

42. On September 14, 2017, the [redacted] and Sarepta, through their attorney [redacted], filed U.S. Patent Application No. 15/705,172 ("the '172 Application") on antisense molecules for inducing exon 53 skipping in the dystrophin gene, naming [redacted]. The '172 Application issued as the '851 Patent on June 12, 2018.

Answer: Sarepta admits that U.S. Patent Application No. 15/705,172 ("the '172 application") was filed on behalf of [redacted] and Sarepta by [redacted], [redacted] on September 14, 2017. Sarepta admits that the '172 application issued on June 12, 2018, as the '851 Patent entitled "Antisense Oligonucleotides for Inducing Exon Skipping and Methods of Use Thereof," to UWA as assignee with [redacted]. Sarepta denies any remaining allegations in Paragraph 42.

43. On August 24, 2018, UWA and Sarepta, through their attorney [redacted], filed U.S. Patent Application No. 16/112,371 ("the '371 Application") on antisense molecules for inducing exon 53 skipping in the dystrophin gene, again naming [redacted]. The '371 Application issued as the '590 Patent on March 12, 2019.

Answer: Sarepta admits that U.S. Patent Application No. 16/112,371 ("the '371 application") was filed on behalf of [redacted] and Sarepta by [redacted] on August 24, 2018. Sarepta admits that the '371 application issued on March 12, 2019, as the '590 Patent entitled "Antisense Oligonucleotides for Inducing Exon Skipping and Methods of Use Thereof," to UWA as assignee with [redacted]. Sarepta denies any remaining allegations in Paragraph 43.

44. On August 24, 2018, UWA and Sarepta, through their attorney [redacted], filed U.S. Patent Application No. 16/112,453 ("the '453 Application") on methods for treating a patient with DMD with mutations amenable to exon 53 skipping by administering antisense

molecules for inducing exon 53 skipping, again naming [redacted]. The '453 Application issued as the '827 Patent on April 23, 2019.

Answer: Sarepta admits that U.S. Patent Application No. 16/112,453 ("the '453 application") was filed on behalf of [redacted] and Sarepta by [redacted] on August 24, 2018. Sarepta admits that the '453 application issued on April 23, 2019, as the '827 Patent entitled "Antisense Oligonucleotides for Inducing Exon Skipping and Methods of Use Thereof," to UWA as assignee with [redacted]. Sarepta denies any remaining allegations in Paragraph 44.

45. The '172 Application, the '371 Application, and the '453 Application (together, the "UWA Applications") each claimed priority to U.S. Patent Application No. 15/274,772, filed on September 23, 2016, which claimed priority to U.S. Patent Application No. 14/740,097, filed on June 15, 2015, which in turn claimed priority to U.S. Patent Application No. 13/741,150, filed on January 14, 2013, which in turn claimed priority to U.S. Patent Application No. 13/168,857, filed on June 24, 2011, which in turn claimed priority to U.S. Patent Application No. 12/837,359, filed on July 15, 2010, which in turn claimed priority to U.S. Patent Application No. 11/570,691, filed on January 15, 2008, which was the National Phase Application of PCT Application PCT/AU2005/000943, filed on June 28, 2005 ("the PCT Application"). The PCT Application claimed priority to Australian Patent Application No. 2004903474, filed on June 28, 2004 ("the AU Application").

Answer: Sarepta admits that the '172, '371, and '453 applications (collectively, "the UWA Applications"), through the listed continuation applications, claim priority to International Patent Application No. PCT/AU2005/000943 ("the PCT Application") filed June 28, 2005. On the face of the PCT Application, the Priority Data (30) lists the Australian Patent Application No. 2004903474 ("the AU application") filed on June 28, 2004.

46. The PCT Application was published as WO 2006/000057 ("WO '057"). The specifications of the UWA Applications are substantially identical to WO '057.

Answer: Sarepta admits the allegations in Paragraph 46.

47. Sarepta asserts via its Counterclaims in this litigation that VILTEPSO® infringes at least claim 1 of the '851 Patent, at least claim 1 of the '590 Patent, and at least claim 1 of the '827 Patent ("the Sarepta Asserted Claims."). D.I. 89 ¶¶ 42, 46-47, 56, 59-61, 66, 70-71.

Answer: Sarepta admits the allegations in Paragraph 47.

48. The Sarepta Asserted Claims each claim a genus of ASOs "of 20 to 31 bases comprising . . . at least 12 consecutive bases of [SEQ ID NO: 195] . . . where in the antisense oligonucleotide is a morpholino antisense oligonucleotide, and wherein the antisense oligonucleotide induces exon 53 skipping . . ." (the "Claimed Genus") and methods of using such ASOs for the treatment of DMD in patients who have a mutation of the DMD gene that is amenable to exon 53 skipping. *See* D.I. 89 ¶ 24.

Answer: Sarepta admits that the claims of the UWA Patents are directed to an "antisense oligonucleotide of 20 to 31 bases comprising a base sequence that is 100% complementary to consecutive bases of a target region of exon 53 of the human dystrophin pre-mRNA, wherein the target region is within annealing site H53A(+23+47) and annealing site H53A(+39+69), wherein the base sequence comprises at least 12 consecutive bases of CUG AAG GUG UUC UUG UAC UUC AUC C (SEQ ID NO: 195), in which uracil bases are thymine bases, wherein the antisense oligonucleotide is a morpholino antisense oligonucleotide, and wherein the antisense oligonucleotide induces exon 53 skipping; or a pharmaceutically acceptable salt thereof" ('851 Patent at claim 1); an "antisense oligonucleotide of 20 to 31 bases comprising a base sequence that is 100% complementary to consecutive bases of a target region of exon 53 of the human dystrophin pre-mRNA, wherein the base sequence comprises at least 12 consecutive bases of CUG AAG GUG UUC UUG UAC UUC AUC C (SEQ ID NO: 195), in which uracil bases are thymine bases, wherein the antisense oligonucleotide is a morpholino antisense oligonucleotide, and wherein the antisense oligonucleotide induces exon 53 skipping; or a pharmaceutically acceptable salt thereof" ('590 Patent at claim 1); and a "method for treating a patient with Duchenne muscular dystrophy (DMD) in need thereof who has a mutation of the DMD gene that is amenable to exon 53 skipping, comprising administering to the patient an antisense oligonucleotide of 20 to 31 bases comprising a base sequence that is 100% complementary to consecutive bases of a target region of exon 53 of the human dystrophin pre-mRNA, wherein the base sequence comprises at least 12 consecutive

bases of CUG AAG GUG UUC UUG UAC UUC AUC C (SEQ ID NO: 195), in which uracil bases are thymine bases, wherein the antisense oligonucleotide is a morpholino antisense oligonucleotide, and wherein the antisense oligonucleotide induces exon 53 skipping; or a pharmaceutically acceptable salt thereof" ('827 Patent at claim 1). Sarepta denies any remaining allegations in Paragraph 48.

49. Upon information and belief, none of the sequences presented in the AU Application target exon 53 or are described as being capable of inducing skipping of exon 53. SEQ ID NO. 195, a sequence recited in each of the Sarepta Asserted Claims, was not described by UWA until it filed the PCT Application. Accordingly, the earliest priority date to which the UWA Patents could possibly be entitled is June 28, 2005, the PCT Application filing date.

Answer: Paragraph 49 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta admits that the AU application does not include sequences of antisense oligonucleotides targeting exon 53 but does include sequences targeting a number of exons, including exons 4, 6, 7, and 8. Sarepta admits that the claims of the UWA Patents are entitled to a priority date of at least the June 28, 2005 filing date of the PCT Application. Sarepta denies any remaining allegations in Paragraph 49.

Responses to Allegations that [redacted] Had Not Invented the Claimed Genus as of the PCT Filing Date

50. As stated in WO '057 and the '851 Patent specification, as of June 28, 2005, [redacted] "attempts to induce exon skipping using antisense molecules have had mixed success" and "[s]imply directing the antisense oligonucleotides to motifs presumed to be critical for splicing is no guarantee of the efficacy of that compound in a therapeutic setting" and "[a]ttempts by the inventors to develop a rational approach in antisense molecules design were not completely successful as there did not appear to be a consistent trend that could be applied to all exons. As such, the identification of the most effective and therefore most therapeutic antisense molecules compounds has been the result of empirical studies." '851 patent, Col. 3:43-44; Col. 4:19-22; Col. 32:15-21; WO '057 at 4:13-14, 5:16-18, 35:1-6. [redacted] further noted that "size or length of the antisense oligonucleotide itself is not always a primary factor when designing antisense molecules" and "there does not appear to be any standard motif that can be blocked or masked by antisense molecules to redirect splicing." '851 Patent, Col. 23:60-63 and 24:4-6; WO '057 at 21:10-13, 18-20.

Answer: Sarepta admits that Paragraph 50 contains excerpted quotations from different portions of the specification of the '851 Patent and WO '057. The cited documents speak for themselves, and, thus, Sarepta denies NS's characterizations thereof. Sarepta denies any remaining allegations in Paragraph 50.

51. During prosecution of the '172 Application, and in order to overcome rejections under 35 U.S.C. § 103, the applicant UWA, [redacted], and their attorney [redacted] argued that "at the time the instant invention was made, there was a significant level of unpredictability associated with selecting specific antisense oligonucleotide sequences to induce effective dystrophin exon skipping." *See* Exhibit A, 2018-01-05 Amendment, at 10. [redacted] and their attorney characterized the state of the art as teaching that "*significant experimentation is required* to arrive at specific oligonucleotides" and "it is a hit-or-miss proposition in terms of whether any given antisense oligonucleotide will be capable of inducing exon skipping, *even in situations where the antisense oligonucleotides are very similar to each other in terms of nucleotide sequence and other variables concerning the chemical backbone are fixed*." *Id.* at 11, 13 (emphasis original). In other words, [redacted] and their attorney were aware during prosecution of the UWA Patents and at the time the PCT Application was filed that providing a base sequence (SEQ ID NO: 195) and specifying a backbone (morpholino) is insufficient to predict whether any similar ASO will induce exon 53 skipping and relied on this unpredictability to overcome rejections.

Answer: Sarepta admits that the document attached to the Counterclaims as Exhibit A contains the statements made during prosecution of the '172 application: "Even assuming, *arguendo,* that one of ordinary skill would have selected h53AON1 of van Ommen et al. as a lead compound and would have been motivated to modify it in the particular way necessary to arrive at the subject matter of the claims, there would be no reasonable expectation of success because at the time the instant invention was made, there was a significant level of unpredictability associated with selecting specific antisense oligonucleotide sequences to induce effective dystrophin exon skipping"; "Aartsma-Rus (2002) teaches that significant experimentation is required to arrive at specific oligonucleotides"; and "It is evident from these results that applying the design rationale described by van Ommen et al. is a hit- or-miss proposition in terms of whether any given antisense oligonucleotide will be capable of inducing skipping, even in situations where the antisense

oligonucleotides are very similar to each other in terms of nucleotide sequence, and other variables concerning the chemical backbone are fixed." The cited document speaks for itself, and, thus, Sarepta denies NS's characterizations thereof. Sarepta denies any remaining allegations in Paragraph 51.

52. [redacted] and their attorney argued that, "at or near the date of Applicants' invention" in 2005 and even "beyond 2005," "*a trial and error procedure* is still involved to identify potent AONs." *Id.* at 12-14 (emphasis original). [redacted] and their attorney also characterized a 2011 article by Wu et al. as "evidence developed after the instant filing date." *Id.* at 14. [redacted] and their attorney further argued that "[i]mportantly, the PTAB in Interference No. 106,007 concerning exon 53 antisense oligonucleotides for DMD held that the field of antisense oligonucleotides for exon skipping for DMD was unpredictable at the time the instant application was filed." *Id.* at 15. [redacted] and their attorney asserted that "[u]npredictability in this art was determined by the PTAB to have existed at the time of the instant invention (and years afterwards) and "[t]he PTAB's determination of unpredictability still applies." *Id.* at 16.

Answer: Sarepta admits that the document attached to the Counterclaims as Exhibit A contains the statements made during prosecution of the '172 application: "Similar examples of unpredictability were reported by van Ommen et al. and other investigators at or near the date of Applicants' invention"; "The recognition of the lack of predictability in the field of exon skipping continued beyond 2005. A 2007 paper co-authored by van Ommen co-inventors Aartsma-Rus and van Deutekom states ...."; "And again in 2009 van Ommen and co-workers wrote that while existing software programs can facilitate design, 'in general a trial and error procedure is still involved to identify potent AONs'"; "Wu et al. is evidence developed after the instant filing date"; "Importantly, the Patent Trial and Appeal Board (PTAB) in Interference No. 106,007 ('the '007 interference') concerning exon 53 antisense oligonucleotides for DMD held that the field of antisense oligonucleotides for exon skipping for DMD was unpredictable at the time the instant application was filed"; "Unpredictability in this art was determined by the PTAB to have existed at the time of the instant invention (and years afterwards)"; and "The PTAB's determination of

unpredictability still applies." The cited document speaks for itself, and, thus, Sarepta denies NS's characterizations thereof. Sarepta denies any remaining allegations in Paragraph 52.

53. Upon information and belief, [redacted]. The UWA Patents are only properly entitled to claim priority to, at the earliest, the September 14, 2017 filing date of the '172 Application.

Answer: Paragraph 53 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta denies the allegations in Paragraph 53.

54. The Claimed Genus encompasses a vast number of ASOs that are 20 to 31 bases and comprise at least 12 consecutive bases of SEQ ID NO: 195.

Answer: Sarepta admits that the claims of the UWA Patents recite an "antisense oligonucleotide of 20 to 31 bases comprising a base sequence that is 100% complementary to consecutive bases of a target region of exon 53 of the human dystrophin pre-mRNA, wherein the target region is within annealing site H53A(+23+47) and annealing site H53A(+39+69), wherein the base sequence comprises at least 12 consecutive bases of CUG AAG GUG UUC UUG UAC UUC AUC C (SEQ ID NO: 195), in which uracil bases are thymine bases, wherein the antisense oligonucleotide is a morpholino antisense oligonucleotide, and wherein the antisense oligonucleotide induces exon 53 skipping; or a pharmaceutically acceptable salt thereof" ('851 Patent at claim 1); an "antisense oligonucleotide of 20 to 31 bases comprising a base sequence that is 100% complementary to consecutive bases of a target region of exon 53 of the human dystrophin pre-mRNA, wherein the base sequence comprises at least 12 consecutive bases of CUG AAG GUG UUC UUG UAC UUC AUC C (SEQ ID NO: 195), in which uracil bases are thymine bases, wherein the antisense oligonucleotide is a morpholino antisense oligonucleotide, and wherein the antisense oligonucleotide induces exon 53 skipping; or a pharmaceutically acceptable salt thereof"

('590 Patent at claim 1); and a "method for treating a patient with Duchenne muscular dystrophy (DMD) in need thereof who has a mutation of the DMD gene that is amenable to exon 53 skipping, comprising administering to the patient an antisense oligonucleotide of 20 to 31 bases comprising a base sequence that is 100% complementary to consecutive bases of a target region of exon 53 of the human dystrophin pre-mRNA, wherein the base sequence comprises at least 12 consecutive bases of CUG AAG GUG UUC UUG UAC UUC AUC C (SEQ ID NO: 195), in which uracil bases are thymine bases, wherein the antisense oligonucleotide is a morpholino antisense oligonucleotide, and wherein the antisense oligonucleotide induces exon 53 skipping; or a pharmaceutically acceptable salt thereof" ('827 Patent at claim 1). Sarepta denies any remaining allegations in Paragraph 54.

55. SEQ ID NO: 195 is not a morpholino ASO but rather a 2-O-methyl phosphorothioate ASO. *See, e.g.*, '851 Patent Table 1A titled "Description of 2-O-methyl phosphorothioate antisense oligonucleotides *that have been used to date* to study induced exon skipping during the processing of the dystrophin pre-mRNA. Since *these 2'-O-methyl antisense oligonucleotides* are more RNA-like, U represents uracil. With other antisense chemistries such as peptide nucleic acids or morpholinos, these U bases may be shown as 'T' and disclose SEQ ID NO: 195 as "CUG AAG GUGU UC UUG UAC UUC AUC C."(emphasis added); *see also* WO '057 at 16-17. The '851 Patent does not disclose any therapeutic utility or potential for therapeutic utility for SEQ ID NO: 195. Instead, the '851 Patent teaches that a *different* ASO that is *not* a member of the Claimed Genus, SEQ ID NO: 193, induced the strongest exon 53 skipping. '851 Patent, Col. 64:48-49; WO '057 at 62:14-15.

Answer: Sarepta admits that Table 1A of the '851 Patent states: "Description of 2'-O-methyl phosphorothioate antisense oligonucleotides that have been used to date to study induced exon skipping during the processing of the dystrophin pre-mRNA. Since these 2'-O-methyl antisense oligonucleotides are more RNA-like, U represents uracil. With other antisense chemistries such as peptide nucleic acids or morpholinos, these U bases may be shown as 'T.'" Sarepta admits that an antisense oligonucleotide with "at least 12 consecutive bases of CUG AAG GUG UUC UUG UAC UUC AUC C (SEQ ID NO: 195)" in the context of the claims of the '851,

'590, and '827 Patents contains thymine bases instead of uracil bases. The cited documents speak for themselves, and, thus, Sarepta denies NS's characterizations thereof. Sarepta denies any remaining allegations in Paragraph 55.

56. Upon information and belief, as of the PCT Application filing date, [redacted].

Answer: Sarepta admits that, [redacted]. Sarepta admits that, [redacted]. Sarepta denies any remaining allegations in Paragraph 56.

57. Upon information and belief, [redacted].

Answer: Sarepta denies the allegations in Paragraph 57.

58. Thus, upon information and belief, as of the PCT Application filing date, [redacted].

Answer: Sarepta denies the allegations in Paragraph 58.

59. [redacted].

Answer: Sarepta denies the allegations in Paragraph 59.

60. Conception is the "formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice." *Hybritech Inc. v. Monoclonal Antibodies Inc.*, 802 F. 2d 1367, 1376 (Fed. Cir. 1986). There must be a contemporaneous recognition and appreciation of the invention for there to be conception. *Silvestri v. Grant*, 496 F.2d 593, 596 (CCPA 1974).

Answer: Paragraph 60 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta denies the allegations in Paragraph 60.

61. Upon information and belief, [redacted] did not conceive the genus of antisense oligonucleotides claimed by each UWA Patent as of the PCT Application filing date. [redacted] could not possibly have formed a "definite and permanent idea of the complete and operative invention" or have a contemporaneous recognition and appreciation of the Claimed Genus [redacted].

Answer: Paragraph 61 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta denies the allegations in Paragraph 61.

62. [redacted]. *Yorkey v. Diab*, 601 F.3d 1279, 1286 (Fed. Cir. 2010); *In re Curtis*, 354 F.3d 1347, 1358 (Fed. Cir. 2004) ("[A] patentee will not be deemed to have invented species sufficient to constitute the genus by virtue of having disclosed a single species when . . . the evidence indicates ordinary artisans could not predict the operability in the invention of any species other than the one disclosed.").

Answer: Paragraph 62 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta denies the allegations in Paragraph 62.

63. [redacted] cannot rely on a constructive reduction to practice because the disclosure of the PCT Application does not comply with 35 U.S.C. § 112, first paragraph. *Kawai v. Metlesics*, 480 F.2d 880, 886, (CCPA 1973). The UWA Patents are not entitled to claim priority to the June 28, 2005 filing date of the PCT Application under 35 U.S.C. § 120, and are invalid under 35 U.S.C. § 112 on the same basis. *See* D.I. 89 at ¶¶ 88-91.

Answer: Paragraph 63 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta denies the allegations in Paragraph 63.

64. [redacted].

Answer: Sarepta denies the allegations in Paragraph 64.

65. The PCT Application references a single ASO with at least 12 consecutive bases of SEQ ID NO: 195, which only induced "very faint skipping to 50 nM." '851 patent, Table 39; WO '057 at 62. This single ASO neither enables nor describes the vast genus of ASOs encompassed by the Claimed Genus sufficient to meet the requirements of 35 U.S.C. § 112, particularly in an unpredictable art. *See Goeddel v. Sugano*, 61 F.3d 1350, 1355 (Fed. Cir. 2010).

Answer: Paragraph 65 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta denies the allegations in Paragraph 65.

66. The PCT Application does not disclose any ASO that is 20 to 31 bases in length and is at least 12 consecutive bases of SEQ ID NO: 195 other than SEQ ID NO: 195 itself.

Answer: Sarepta denies the allegations in Paragraph 66.

67. The PCT Application does not disclose any ASO that is 20 to 31 bases in length and is "at least 12 consecutive bases of . . . (SEQ ID NO: 195), in which uracil bases are thymine bases" that induces exon 53 skipping.

Answer: Sarepta denies the allegations in Paragraph 67.

68. The PCT Application does not disclose any ASO that is 20 to 31 bases in length and is at least 12 consecutive bases of SEQ ID NO: 195 and is a morpholino ASO that induces exon 53 skipping.

Answer: Sarepta denies the allegations in Paragraph 68.

69. The PCT Application does not disclose even a single ASO with at least 12 consecutive bases of SEQ ID NO: 195 that induces more than "very faint skipping to 50 nM" of exon 53.

Answer: Sarepta denies the allegations in Paragraph 69.

70. The PCT Application does not disclose any ASO in the Claimed Genus that induces a degree of exon 53 skipping that would be clinically or therapeutically relevant in treating a patent with DMD who has a mutation of the DMD gene that is amenable to exon 53 skipping.

Answer: Sarepta denies the allegations in Paragraph 70.

71. In sum, the PCT Application does not constitute a "full, clear, concise and exact description" of the Claimed Genus. *In re Wertheim*, 646 F.2d 527, 538-539 (CCPA 1981). There are no "blaze marks within the disclosure that guide attention to the claimed species" or the Claimed Genus. *In re Ruschig*, 379 F.2d 990, 994-95 (CCPA 1967). Upon information and belief, no reasonable person of ordinary skill in the art would conclude from the PCT Application that [redacted] had invented and possessed the full scope of the Claimed Genus by its filing date.

Answer: Paragraph 71 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta denies the allegations in Paragraph 71.

72. Further demonstrating a lack of conception, recognition, or appreciation of the Claimed Genus when the PCT Application was filed, in work done *after* the filing date, [redacted] pursued SEQ ID NO: 193 rather than the Claimed Genus, as well as AONs targeting different exons. For example, in a later PCT application published as WO 2011/057350, [redacted] disclosed numerous ASOs targeting other exons, and only a handful of ASOs with at least 12 consecutive bases of SEQ ID NO: 195.

Answer: Paragraph 72 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta admits that WO 2011/057350 naming Drs. Wilton and Fletcher and others in the Wilton lab as inventors disclosed antisense oligonucleotides targeting exon 53 with at least 12 consecutive bases of SEQ ID NO: 195. Sarepta denies any remaining allegations in Paragraph 72.

Responses to Allegations that [redacted] and the Attorneys Knowingly Submitted a False Claim of Priority

73. [redacted] attorneys involved in the prosecution of the UWA Applications, including [redacted] (the "Attorneys"), and individuals at Sarepta involved in the filing or prosecution of the UWA Applications, understood that the field of ASOs for inducing exon skipping was highly unpredictable both at the time of filing of the PCT Application and the filing dates of the UWA Applications.

Answer: Sarepta lacks knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 73 and therefore denies them.

74. Upon information and belief, [redacted] knew [redacted] had not invented the Claimed Genus by the PCT Application filing date. Upon information and belief, the Attorneys,

[redacted], and individuals at UWA and Sarepta who were involved in the preparation or prosecution of the UWA Applications, knew that [redacted] had not invented the claimed genus by the PCT Application filing date. Upon information and belief, [redacted] and the Attorneys, and individuals at Sarepta who were involved in the preparation or prosecution of the UWA Applications knew that the claims set forth in the UWA Applications were not entitled to claim priority to the PCT Application because the requirements of 35 U.S.C. § 120 were not met. Yet, [redacted] the Attorneys, and individuals at Sarepta who were involved in the preparation or prosecution of the UWA Applications nevertheless submitted a claim of priority to the PCT Application in each of the UWA Applications. [redacted] Attorneys perpetuated this fraud by mischaracterizing the "time the instant invention was made," "the date of Applicants' invention" and "the time of the instant invention" to the USPTO in arguing for patentability. Exhibit A, at 10, 12, 16.

Answer: Sarepta denies the allegations in Paragraph 74.

75. Thus, [redacted] and the Attorneys knew one fact and presented another, thereby permitting an inherence that they made the false representations with the intent to deceive. *See Dippin Dots, Inc. v. Mosey*, 476 F.3d 1337, 1347 (Fed. Cir. 2007).

Answer: Paragraph 75 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta denies the allegations in Paragraph 75.

76. These priority claims were false and objectively unreasonable. Upon information and belief, UWA, [redacted], and the Attorneys made the false priority claim in each of the UWA Applications at Sarepta's direction to avoid prior art and obtain patent claims that were aimed at capturing VILETPSO® and many other ASOs for anticompetitive purposes.

Answer: Paragraph 76 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta denies the allegations in Paragraph 76.

77. "Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned." 37 C.F.R. § 1.56(a) (Sept. 8, 2000). Information is "material to patentability when it is not cumulative to information already of record or being made of record in the application, and (1) it establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or (2) it refutes, or is inconsistent with, a position the applicant takes in: (i) opposing an argument of unpatentability relied on by the Office, or (ii) asserting an argument of patentability." 37 C.F.R. § 156(b). The priority date of a patent application is inherently material to patentability. *Nilssen v. Osram Sylvania, Inc.*, 504 F.3d 1223, 1233 (Fed. Cir. 2007).

Answer: Paragraph 77 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta admits that Paragraph 77 recites the text of 37 C.F.R. § 1.56. Sarepta otherwise denies the allegations in Paragraph 77.

78. Individuals who owe the USPTO a duty of candor and good faith are: "(1) each inventor named in the application; (2) each attorney or agent who prepares or prosecutes the application; and (3) every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee, or with anyone to whom there is an obligation to assign the application." 37 C.F.R. § 156I.

Answer: Paragraph 78 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta responds that Paragraph 78 recites portions of the text of 37 C.F.R. § 1.56. Sarepta otherwise denies the allegations in Paragraph 78.

79. Thus, [redacted] and the Attorneys, along with any individuals at Sarepta involved in the filing and prosecution of the UWA Applications, owe a duty of candor and good faith to the USPTO as individuals associated with the filing and prosecution of a patent application. 37 C.F.R. § 1.56I.

Answer: Paragraph 79 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta denies the allegations in Paragraph 79.

80. Upon information and belief, [redacted] and the Attorneys, along with any individuals at Sarepta involved in the filing and prosecution of the UWA Applications, each violated their duty of candor and good faith to the USPTO by submitting and maintaining in each of the UWA Applications a claim of priority to the PCT Application that they knew was false and unsupported in view of [redacted] work and the specification.

Answer: Paragraph 80 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta denies the allegations in Paragraph 80.

81. Upon information and belief, [redacted] and the Attorneys, along with any individuals at Sarepta involved in the filing and prosecution of the UWA Applications, each violated their duty of candor and good faith to the USPTO by withholding information that [redacted] possessed at best [redacted] from the Claimed Genus as of the PCT Application filing date.

Answer: Paragraph 81 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta denies the allegations in Paragraph 81.

82. Upon information and belief, [redacted] and the Attorneys, along with any at Sarepta involved in the filing and prosecution of the UWA Applications, deliberately submitted false information and withheld information material to patentability with deceptive intent to obtain allowance of the Sarepta Asserted Claims. Upon information and belief, [redacted] and the Attorneys engaged in this conduct at Sarepta's direction in an attempt to obtain claims encompassing the NS Counterclaim Defendants' competing product [redacted].

Answer: Sarepta denies the allegations in Paragraph 82.

83. Further, upon information and belief, [redacted] and the Attorneys, along with any individuals at Sarepta involved in the filing and prosecution of the UWA Applications, were aware of references published after the filing date of the PCT Application and before the filing dates of the UWA Applications that would have been material to patentability if they had been considered by the USPTO during examination of the UWA Applications.

Answer: Sarepta denies the allegations in Paragraph 83.

84. By way of example only, on information and belief, [redacted] and the Attorneys, and individuals at Sarepta involved in the prosecution of the UWA Applications were aware of Sazani et al., U.S. Patent Application Publication No. 2010/0130591 ("Sazani") and Watanabe et al., U.S. Patent Application Publication No. US 2013/0211062 ("Watanabe") (together, the "Material References"). Upon information and belief, [redacted] or the Attorneys knew these Material References were properly prior art to the UWA Applications but for the false priority claim. Upon information and belief, [redacted] and the Attorneys, and individuals at Sarepta involved in the prosecution of the UWA Applications were aware that the Material References were but-for material to the patentability of the Sarepta Asserted Claims.

Answer: Sarepta denies the allegations in Paragraph 84.

85. Sazani is titled "Multiple Exon Skipping Compositions for DMD" and, for example, discloses an antisense oligomer spanning exactly H53A(+23+47), and is therefore identical to SEQ ID NO: 195 recited in the Sarepta Asserted Claims:

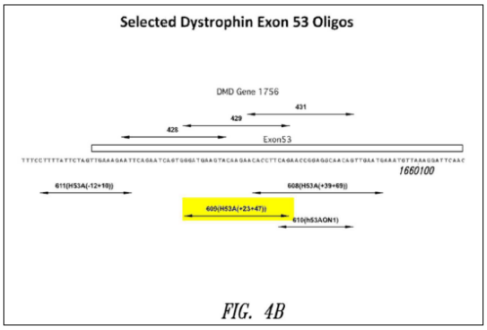
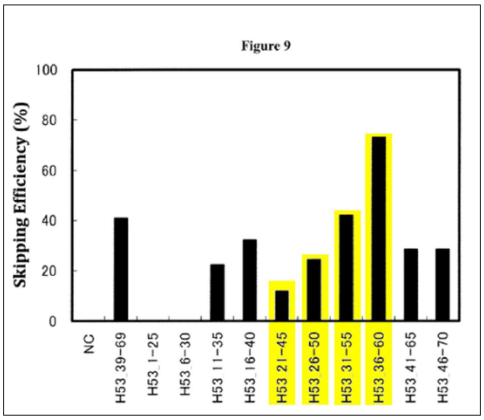


FIG. 4B

Watanabe, a patent publication disclosing AONs that cause exon 53 skipping, further discloses a series of antisense oligonucleotides that bind along exon 53 at sites that overlap with the portion of exon 53 to which SEQ ID NO: 195 binds and which cause varying degrees of skipping:



Answer: Sarepta admits that Sazani is titled "Multiple Exon Skipping Compositions for DMD" and states, *inter alia*, that "SEQ ID NO: 429 was shown to be most effective at inducing exon 53 skipping as shown in FIGS. 4B-F. However, when compared to other exon 53 antisense sequences, SEQ ID NO: 429 proved identical to H53A(+23+47) which is listed as SEQ ID NO: 195 in WO 2006/000057 ...." Sarepta admits that Watanabe discloses antisense oligonucleotides within the scope of the claims of the UWA Patents that were shown to induce exon 53 skipping. The cited documents speak for themselves, and, thus, Sarepta denies NS's characterizations thereof. Sarepta denies the remaining allegations in Paragraph 85.

86. Sarepta filed the application published as Sazani. Upon information and belief, [redacted]. Sazani discloses that its SEQ ID NO: 429 "proved identical to H53A(+23+47) which is listed as SEQ ID NO: 195 in WO 2006/00057," the publication of the PCT Application. Sazani at [0293]. In contrast to the PCT Application, Sazani discloses its SEQ ID NO: 429 "was shown to be most effective at inducing exon skipping" from the ASOs targeting exon 53 described in Sazani, thus illustrating the unpredictability of the art. *Id.*

Answer: Sarepta admits that the patent application published as Sazani was filed by Seed IP Law Group on October 23, 2009 and that [redacted]. Sarepta admits that Sazani states, *inter alia*, that "SEQ ID NO: 429 was shown to be most effective at inducing exon 53 skipping as shown in FIGS. 4B-F. However, when compared to other exon 53 antisense sequences, SEQ ID NO: 429 proved

identical to H53A(+23+47) which is listed as SEQ ID NO: 195 in WO 2006/000057 ...." The cited document speaks for itself, and, thus, Sarepta denies NS's characterizations thereof. Sarepta denies the remaining allegations in Paragraph 86.

87. Upon information and belief, the claim of priority to the PCT Application caused the USPTO to allow the UWA Patents to issue. The USPTO did not consider the Material References because each was published after the claimed priority date and thus was not considered prior art under 35 U.S.C. §§ 102 and 103 to the PCT Application. The USPTO would not have allowed the UWA Patents to issue had the Examiner considered the Material References. Had the Examiner considered the Material References, the Examiner would have found all claims of the UWA Patents unpatentable under 35 U.S.C. §§ 102 and 103 as anticipated and/or obvious.

Answer: Paragraph 87 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta denies the allegations in Paragraph 87.

88. The single most reasonable inference able to be drawn from the evidence is that at least [redacted] and the Attorneys, as well as individuals from UWA or Sarepta involved in the prosecution of the UWA Applications, intended to deceive the USPTO by intentionally and falsely claiming priority to the PCT Application.

Answer: Paragraph 88 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta denies the allegations in Paragraph 88.

89. For example, Watanabe and other references from the Watanabe patent family have been cited against Sarepta's patent applications, including U.S. Application No. 16/243,926 ("the Sazani CON"), a continuation of Sazani that attempted to claim a genus of ASOs "of 21 bases comprising a base sequence . . . . where in the base sequence comprises 19 consecutive bases of SEQ ID NO: 431, where in the antisense oligonucleotide is a morpholino oligomer, and wherein the antisense oligonucleotide induces exon 53 skipping . . ." During prosecution of the Sazani CON, the USPTO examiner rejected a priority claim to the Sazani filing date for failure to comply with 35 U.S.C. § 112(a), thereby rendering Watanabe prior art to the Sazani CON. The USPTO examiner then rejected the claims as anticipated by Watanabe because Watanabe disclosed a sequence consisting of 21 bases comprising 19 consecutive bases of SEQ ID NO: 431. 2019-05-05 Final Rejection. Rather than arguing against the rejection or the priority date determination, Sarepta abandoned the Sazani CON. [redacted] one of the Attorneys, prosecuted the Sazani CON.

Answer: Sarepta admits that U.S. Patent Application No. 16/243,926 ("Sazani CON") is a continuation application of Sazani and was filed on January 9, 2019. Sarepta admits that in an Office Action dated May 15, 2019, the Examiner stated, *inter alia*, that "[t]he effective filing date

of the instant claims 66 and 67 is the instant filing date, which is 01/09/2019" and rejected the claims, which recite an "antisense oligonucleotide of 21 bases comprising a base sequence that is 100% complementary to 21 consecutive bases of exon 53 of the human dystrophin pre-mRNA, wherein the base sequence comprises 19 consecutive bases of CTGTTGCCTCCGGTTCTGAAGGTGT (SEQ ID NO: 431), wherein the antisense oligonucleotide is a morpholino oligomer, and wherein the antisense oligonucleotide induces exon 53 skipping; or a pharmaceutically acceptable salt thereof," as being anticipated by Watanabe. Sarepta admits that the USPTO issued a notice of abandonment on May 17, 2021. Sarepta admits that the Sazani CON application was prosecuted by [redacted]. The file history of Sazani CON speaks for itself, and, thus, Sarepta denies NS's characterizations thereof. Sarepta denies any remaining allegations in Paragraph 89.

90. Upon information and belief, the rejection of the Sazani CON demonstrates that individuals at Sarepta were aware of Watanabe and that Watanabe was but-for material to the UWA Patents and was further aware that the priority claim to the PCT Application was legally unjustified.

Answer: Sarepta denies the allegations in Paragraph 90.

91. As a result of [redacted] and the Attorneys' intentional false claim of priority to the PCT Application with the intent to deceive the USPTO, [redacted] and the Attorneys committed inequitable conduct, thereby rendering the UWA Patents unenforceable. Upon information and belief other individuals involved in the prosecution of the UWA Patents, such as individuals at UWA or Sarepta, also committed inequitable conduct rendering the UWA Patents unenforceable.

Answer: Paragraph 91 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta denies the allegations in Paragraph 91.

92. This case is exceptional, and the NS Counterclaimants are entitled to an award of attorneys' fees under 35 U.S.C. § 285.

Answer: Paragraph 92 contains legal conclusions to which no response is required. To the extent a response is required, Sarepta denies the allegations in Paragraph 92.

Answer to CLAIM XI
(Alleged Walker Process Fraud, 15 U.S.C. § 2)

Sarepta has moved to bifurcate and stay NS's antitrust counterclaim, which is set forth in Paragraphs 93 through 111 and, as such, does not answer those allegations at this time.

Sarepta denies all allegations of the Counterclaims not specifically admitted above.

PRAYER FOR RELIEF

Sarepta denies that NS is entitled to the relief they request or to any other relief.

DEMAND FOR A JURY TRIAL

Sarepta admits that Nippon Shinyaku has demanded a jury trial solely for Claim XI of the Counterclaims but denies that it is entitled to one.

DEFENSES

By alleging the Defenses set forth below, Sarepta does not agree or concede that it bears the burden of proof or the burden of persuasion on any of these issues, whether in whole or in part. For its Defenses to the Counterclaims, Sarepta alleges as follows.

First Defense
(Failure to State a Claim)

The Counterclaims fail to state any claim upon which relief may be granted.

Second Defense
(No Inequitable Conduct)

NS cannot demonstrate that Sarepta engaged in inequitable conduct and/or that the UWA Patents are unenforceable.

Reservation of Additional Defenses

Sarepta reserves any and all additional defenses available under the Federal Rules of Civil Procedure, the patent and antitrust laws of the United States and/or at law or in equity, now

existing, or later arising, as may be developed during discovery or supported by subsequent court rulings.

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September 5, 2023

CERTIFICATE OF SERVICE

I hereby certify that on September 5, 2023, I caused the foregoing to be electronically filed with the Clerk of the Court using CM/ECF, which will send notification of such filing to all registered participants.

I further certify that I caused copies of the foregoing document to be served on September 5, 2023, upon the following in the manner indicated:

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